

Trend Study 25C-1-03

Study site name: Yergy.

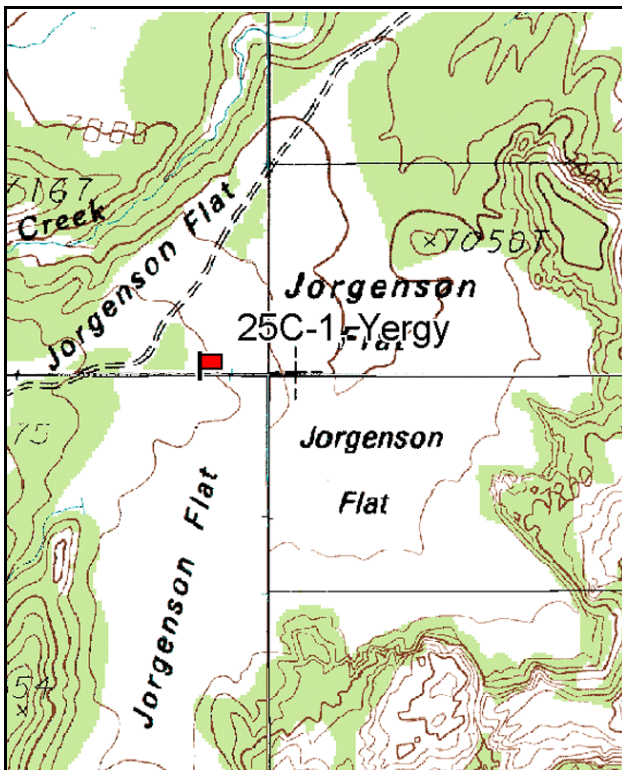
Vegetation type: Chained, Seeded P-J.

Compass bearing: frequency baseline 180 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line4 (71ft). Rebar: belt 1 on 15ft

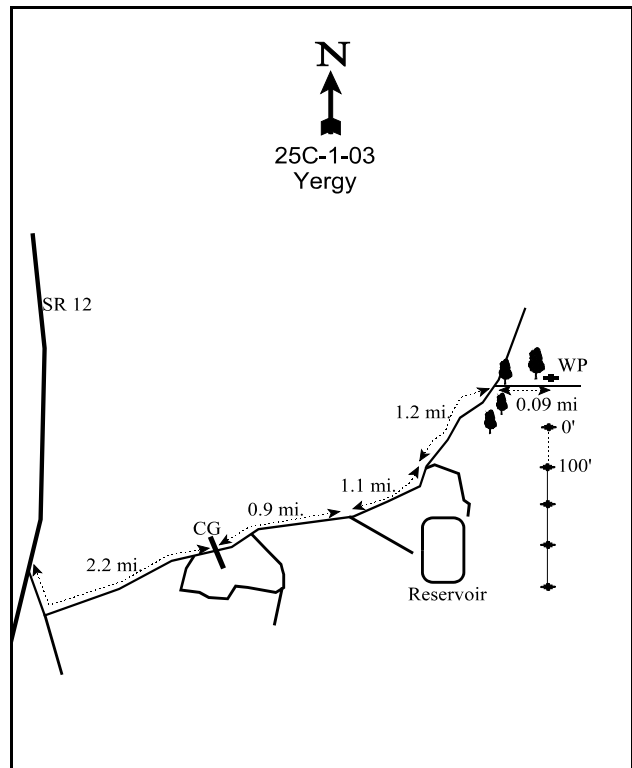
LOCATION DESCRIPTION

From the Pleasant Creek Campground on the Boulder Grover Road, go south 100 feet to a left turn off the main road. Go down this road 2.2 miles to a cattleguard. From the cattleguard, go 0.9 miles to a fork and go left towards Tantalus Creek. Go 1.1 miles on this road to a fork, stay left (the sign says toward Jorgenson Flat). Go 1.2 miles past a corral on the right to a cattleguard. Go 0.1 miles past the cattleguard to a faint road off to the right. Turn on this road and go 0.09 miles through a gate and out to a lone pinyon on the left. The frequency baseline starts 100 feet south of the lone pinyon. The 0-foot stake is a rebar tagged #7117.



Map Name: Lower Bowns Res

Township and Range Unsurveyed



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4219492 N, 477931 E

DISCUSSION

Yergy - Trend Study No. 25C-1

The Yergy trend study is located in an open flat surrounded by slickrock cliffs and dense pinyon and juniper woodland. The flat is now a sagebrush-grass type which was chained and seeded in 1970. The site is nearly flat, with a slight slope to the south. The elevation is approximately 7,100 feet, well within the normal and severe winter range limits on the east side of Boulder Mountain. Pellet group data taken along the study site baseline in 1998 estimated only 1 deer day use/acre (2 ddu/ha), but elk used the area in larger numbers at 21 elk days use/acre (52 edu/ha). Pellet group data from 2003 estimated 11 deer days use/acre and only 1 elk day use/acre (28 ddu/ha and 2 edu/ha). Deer are found in the area year-round but most of the pellet groups appeared to be from winter use. Pellet group quadrat frequency data from 1994 to 2003 indicate a large number of rabbits are also utilizing the site. Cattle graze the area on a deferred rotation grazing system. Cattle use was estimated at 41 cow days use/acre (101 cdu/ha) in 1998 and 24 days use/acre (59 cdu/ha) in 2003. Cattle pats counted in 1998 and 2003 appeared to be from the previous summers of 1997 and 2002 respectively. Harvester ant hills are fairly common over much the area.

The soil depth is moderate and very sandy with a texture which is 84% fine red sand. Effective rooting depth is estimated at almost 11 inches. Rock and pavement are uncommon on the soil surface and throughout the profile. Effective depth measurements were limited by the heavy texture of the soil which was very compacted at 10 to 12 inches in depth. There did not appear to be any restrictive rooting barriers. Soil texture is a loamy sand which is slightly acidic in reaction (pH 6.2). Due to the high sand content and dryness of the soil profile, average soil temperature was high at 74°F at a depth of 12 inches in 1998. Soil temperature was lower in 2003 averaging 63°F at a depth of 13.5 inches. There is a thin layer of litter, mainly from grasses, which has averaged 39% cover between 1985 and 2003. The ratio of protective ground cover to bare ground is marginal but erosion is minimal due to the levelness of the terrain.

Although the flat is dominated by seeded grasses, sagebrush increased substantially between 1985 and 1991. There were very few mature sagebrush plants sampled in 1985 but seedling and young plants were abundant. Data from 1991 showed a large increase in sagebrush density, from 8,000 to 11,531 plants/acre. Density of mature plants increased from 200 plants/acre to 4,133. Young plants were still the most common age class, yet no seedlings were found in 1991. With the much larger sample size taken in 1994, the population was estimated at only 2,400 sagebrush plants/acre. This is a more accurate estimate of the true density of sagebrush on the flat since the shrubs grow in aggregated clumps with large areas of grass in between. The old method used three small 1/200 acre circular plots to estimate shrub density. The original frequency baseline was also placed in an area with few sagebrush, while the density plots happened to be in areas of fairly dense sagebrush and therefore overestimated the actual density of the sagebrush in the area. The population remained at similar densities in 1998 (2,320 plants/acre) and 2003 (2,500 plants/acre). Utilization of the sagebrush has been light to moderate since 1985 with some heavier use reported in 1991. Vigor has remained normal on most plants and percent decadence has remained relatively low. Sagebrush sampled in 2003 was healthy and vigorous with abundant seedheads and good annual leader growth which averaged 1.6 inches.

Other browse species include small numbers of pinyon pine, broom snakeweed, and rabbitbrush. Point-quarter data taken in 1998 estimated a total of only 14 pinyon and juniper trees/acre with average basal diameters of 3.1 and 2.8 inches respectively.

The herbaceous understory is totally dominated by crested wheatgrass which has made up over 95% of the grass cover, and over 90% of the total herbaceous cover since 1994. Blue grama and Russian wildrye are present in low numbers. Forbs are very sparse and make up less than 1% cover.

1985 APPARENT TREND ASSESSMENT

The soil appears stable and trend will improve as vegetative cover increases with an accompanying buildup of litter. The vegetative community is changing as the sagebrush density appears to be increasing with a very high reproductive potential. An increase in mature sagebrush will be good for the winter range, as use is now quite concentrated in the more dense stands of the larger sagebrush. The crested wheatgrass provides spring forage and should continue to be a predominant part of the vegetation as long as it is not overgrazed during the early summer.

1991 TREND ASSESSMENT

The soil trend appears to be declining because percent bare ground has increased from 36% to 49% and litter has decreased from 56% to 39%. Basal vegetation cover has increased however, from 8% to 12%. Percent cover of bare ground should decrease with the end of the drought and a return to normal precipitation patterns. Browse trend is improving from 1985 with increased density for sagebrush and the disappearance of broom snakeweed. Herbaceous understory has declined in production, but nested frequencies have remained stable. The forb component of the herbaceous understory is still almost nonexistent.

TREND ASSESSMENT

soil - down slightly (2)

browse - up (5)

herbaceous understory - stable but forbs lacking (3)

1994 TREND ASSESSMENT

Ground cover characteristics have continued to decline due to increased percent bare ground and reduced litter cover. Even with the increased bare ground, erosion is not a problem on this site. The browse trend is stable for now. The new larger sample size used in 1994 gives a better idea of actual population density of sagebrush on the entire flat. Percent decadency of the sagebrush is very low and vigor is good. Trend for the herbaceous understory is stable. Nested frequency of crested wheatgrass has remained stable since 1985. Production also looks much better than 1991. A few more forb species were picked up with the larger sample taken in 1994, but they are still very scarce.

TREND ASSESSMENT

soil - down (1)

browse - stable (3)

herbaceous understory - stable (3)

1998 TREND ASSESSMENT

Trend for soil has improved with above normal precipitation during the 1997 and 1998 seasons. Percent bare ground declined from 54% in 1994 to 47% in 1998. Litter cover also increased from 28% to 45% and vegetative cover increased from 22% to 38%. Erosion is not a problem on the site due to adequate vegetation and litter cover combined with the level terrain and the high infiltration capacity of the soil. It appears that the population of basin big sagebrush has stabilized at about 2,300 plants/acre. Utilization is currently moderate, vigor normal, and percent decadence low at 18%. No seedlings were encountered but young plants represent 15% of the population, numerous enough to maintain the stand with good survival. The herbaceous understory trend is stable. Crested wheatgrass still dominates the site by providing 96% of the grass cover and 77% of the total vegetation cover. Production is up as grass cover is nearly double that of 1994. However, the sum of nested frequency of grasses and forbs has remained similar to 1994 levels. Forbs are still lacking with only two species found in 1998.

TREND ASSESSMENT

soil - up (5)

browse - stable (3)

herbaceous understory - stable, but forb component is very poor (3)

2003 TREND ASSESSMENT

Trend for soil is down slightly. Average cover of vegetation and litter have declined while cover of bare ground has increased. Total herbaceous vegetation cover, which makes up the majority of the vegetation cover, has declined 52% due to drought. Erosion is not a problem on this site however. There is still a good amount of herbaceous vegetation cover and the level terrain helps minimize soil movement. Trend for browse is stable. Density has remained similar to 1998 estimates. Utilization is light, vigor is normal, and the portion of the population classified as decadent is small. Young recruitment is low but no sagebrush appear to be dying. Most mature plants are vigorous and producing abundant seedheads and annual leader growth averaged 1.6 inches. Herbaceous understory trend is down slightly. Sum of nested frequency of perennial grasses has declined slightly but, more importantly, nested frequency of crested wheatgrass has declined significantly. Average cover also declined 55% since 1998. Herbaceous production was poor in 2003 due to very dry conditions during the springs of 2002 and 2003, which averaged only 31% and 68% or normal respectively. A return to normal precipitation patterns will reverse this trend.

TREND ASSESSMENT

soil - down slightly (2)

browse - stable (3)

herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --

Management unit 25C, Study no: 1

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'94	'98	'03	'94	'98	'03
G	Agropyron cristatum	_{ab} 311	_{ab} 312	_{ab} 311	_b 326	_a 282	16.90	29.39	13.37
G	Agropyron elongatum	3	-	-	-	-	-	-	-
G	Agropyron intermedium	3	-	-	-	-	-	-	-
G	Agropyron smithii	_a -	_b 23	_a -	_a -	_a -	-	-	-
G	Bouteloua gracilis	41	60	48	55	42	.29	.87	.53
G	Elymus junceus	_b 27	_b 26	_a 6	_{ab} 7	_a 6	.18	.18	.18
G	Munroa squarrosa (a)	-	_b 16	_a -	_a -	_a -	-	-	-
G	Poa secunda	-	-	3	-	-	.00	-	-
G	Sitanion hystrix	1	-	-	-	-	-	-	-
G	Sporobolus cryptandrus	_b 14	_{ab} 7	_a -	_a -	_a -	-	-	-
G	Vulpia octoflora (a)	-	-	-	1	-	-	.00	-
Total for Annual Grasses		0	16	0	1	0	0	0.00	0
Total for Perennial Grasses		400	428	368	388	330	17.38	30.45	14.10
Total for Grasses		400	444	368	389	330	17.38	30.46	14.10

T y p e	Species	Nested Frequency					Average Cover %		
		'85	'91	'94	'98	'03	'94	'98	'03
F	Cordylanthus spp. (a)	-	-	a ⁻	a ⁻	b ¹⁵	-	-	.18
F	Eriogonum cernuum (a)	-	-	4	-	-	.01	-	-
F	Erigeron pumilus	-	-	4	-	-	.01	-	-
F	Lupinus argenteus	a ⁻	a ⁻	b ¹³	b ¹⁸	ab ⁷	.22	.20	.07
F	Orobanche fasciculata	-	-	-	-	6	-	-	.01
F	Penstemon spp.	-	-	-	-	-	.00	-	-
F	Portulaca oleracea (a)	-	-	a ⁻	a ⁻	b ¹³	-	-	.03
F	Sphaeralcea coccinea	9	14	7	12	16	.20	.08	.28
F	Sphaeralcea parvifolia	-	2	-	-	-	-	-	-
Total for Annual Forbs		0	0	4	0	28	0.00	0	0.20
Total for Perennial Forbs		9	16	24	30	29	0.44	0.28	0.36
Total for Forbs		9	16	28	30	57	0.45	0.28	0.56

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 25C, Study no: 1

T y p e	Species	Strip Frequency			Average Cover %		
		'94	'98	'03	'94	'98	'03
B	Artemisia tridentata tridentata	43	50	52	4.75	7.37	10.52
B	Chrysothamnus viscidiflorus viscidiflorus	1	1	1	-	-	-
B	Gutierrezia sarothrae	0	0	1	-	-	.03
B	Opuntia spp.	1	0	0	-	-	-
Total for Browse		45	51	54	4.75	7.37	10.55

CANOPY COVER, LINE INTERCEPT --

Management unit 25C, Study no: 1

Species	Percent Cover
	'03
Artemisia tridentata tridentata	12.61
Chrysothamnus viscidiflorus viscidiflorus	.11

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 25C, Study no: 1

Species	Average leader growth (in)
	'03
Artemisia tridentata tridentata	1.6

POINT-QUARTER TREE DATA --
Management unit 25C, Study no: 1

Species	Trees per Acre		Average diameter (in)	
	'98	'03	'98	'03
Juniper osteosperma	6	N/A	2.8	N/A
Pinus edulis	8	N/A	3.2	N/A

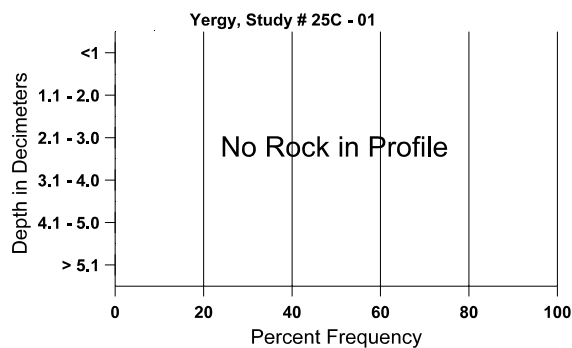
BASIC COVER --
Management unit 25C, Study no: 1

Cover Type	Average Cover %				
	'85	'91	'94	'98	'03
Vegetation	8.00	12.00	21.68	38.29	25.52
Rock	0	0	.16	.15	.15
Pavement	0	.25	.06	.22	1.91
Litter	56.25	39.25	27.68	44.88	27.21
Cryptogams	0	0	0	0	0
Bare Ground	35.75	48.50	54.40	47.36	55.17

SOIL ANALYSIS DATA --
Management unit 25C, Study no: 1, Study Name: Yergy

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
10.8	63.0 (13.5)	6.2	84.0	7.4	8.6	1.1	10.8	64.0	0.5

Stoniness Index



PELLET GROUP DATA --

Management unit 25C, Study no: 1

Type	Quadrat Frequency			Days use per acre (ha)	
	'94	'98	'03	'98	'03
Rabbit	51	58	73	-	-
Elk	3	8	3	21 (52)	1 (2)
Deer	32	38	8	1 (2)	11 (28)
Cattle	10	19	21	41 (101)	24 (59)

BROWSE CHARACTERISTICS --

Management unit 25C, Study no: 1

		Age class distribution (plants per acre)					Utilization				
Y	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata</i> tridentata											
85	8000	3666	7800	200	-	-	.83	0	0	3	10/8
91	11533	-	6000	4133	1400	-	43	26	12	12	12/12
94	2400	60	80	2260	60	100	31	0	3	.83	28/41
98	2320	-	340	1560	420	60	49	3	18	3	23/34
03	2500	-	120	2040	340	60	8	0	14	0	27/46
<i>Chrysothamnus nauseosus</i>											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
94	0	-	-	-	-	-	0	0	-	0	35/71
98	0	-	-	-	-	-	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	-	0	-/-
<i>Chrysothamnus viscidiflorus</i> viscidiflorus											
85	0	-	-	-	-	-	0	0	0	0	-/-
91	0	-	-	-	-	-	0	0	0	0	-/-
94	20	-	-	20	-	-	0	0	0	0	22/10
98	20	-	-	20	-	-	0	0	0	0	18/19
03	20	-	-	-	20	-	0	0	100	100	21/32
<i>Gutierrezia sarothrae</i>											
85	2332	466	1466	733	133	-	0	0	6	0	7/7
91	0	-	-	-	-	-	0	0	0	0	-/-
94	0	-	-	-	-	-	0	0	0	0	8/9
98	0	-	-	-	-	-	0	0	0	0	-/-
03	20	-	-	20	-	-	0	0	0	0	9/8

		Age class distribution (plants per acre)					Utilization				
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Opuntia spp.											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	66	-	66	-	-	-	0	0	-	0	-/-
94	20	-	-	20	-	-	0	0	-	0	1/2
98	0	-	-	-	-	-	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	-	0	-/-
Pinus edulis											
85	66	-	66	-	-	-	0	0	-	0	-/-
91	66	-	66	-	-	-	0	0	-	0	-/-
94	0	-	-	-	-	-	0	0	-	0	-/-
98	0	-	-	-	-	-	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	-	0	-/-